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The History of Cattle in Hawai'i

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Abstract: Cattle grazing on public lands has not always been an issue in Hawai'i. Cattle grazing stems back over 200 years and has provided a very colorful aspect to Hawai'i's melting pot society by the introduction of the *paniolo*. Despite the obvious role and use of cattle, their introduction has affected the Hawaiian Islands and some of their inhabitants in negative ways. The natural forests and vegetation outlining the islands' unique terrestrial biota are in danger of losing their species. The danger of the loss of resources and the introduction of parasites are a key factor in the negative effects of cattle. Feral ungulates also reduce enough of the understory that the aesthetic value of Hawai'i's forest is diminished. The damage is not as notable as on the mainland, but the Hawaiian archipelago is the most geographically isolated in the world resulting in a rich diversity of species that are now in danger as a result of the unnatural pressures resulting from cattle.

Introduction

The introduction of cattle to the Hawaiian Islands has played an important role in their natural history. Significant changes have occurred to Hawai'i's terrestrial biota resulting in the decrease of native forests and component species. The decrease in watershed areas has also played a vital role in the decrease in the native human population that once flourished before European contact and Kamehameha's campaign to unite the islands. Hawai'i has the distinction of being the most geo-

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Published by the Hawaiian Botanical Society which was founded in 1924 to...

> *"...advance the science of botany in all its applications, encourage research in botany in all its phases, promote the welfare of its members and develop the spirit of good fellowship and cooperation among them."*

Any person interested in the plant life of the Hawaiian Islands is eligible for membership. Information may be obtained from the Society at:

c/o Department of Botany
3190 Maile Way
University of Hawai'i
Honolulu, HI 96822

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The Society year is from December 1 through November 30

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Student	$5.00
Family	$12.00
Life (individuals only)	$180.00
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graphically isolated archipelago in the world, resulting in unique characteristics that apply to its ecosystem and people alike. Cattle farming and similar agricultural ventures are an integral part of Hawai'i's cultural development and will continue to play a significant role in the balance with natural preservation.

History

The natural history of Hawai'i recalls a very modest number of domesticated mammals when the first Polynesians arrived around 500 A.D. The environment during the Pre-European era involved an intricate balance between the native Hawaiians and their environment. Following a very strict *kapu* system, Hawaiians integrated resourceful land management systems and practices that involved taro farming to provide their staple starch and fish, chicken and pig as a protein supplement. The terrestrial biota of Hawai'i experienced minimal changes during this time of growth for the early Hawaiians. Many of the resources attained for daily living were gathered near the sea and fresh water habitats.

Captain Cook, sailing under the British flag, led the initial voyage of Europeans to the Hawaiian Islands during the late 1700s. Many other expeditions followed Cook's, each leaving an indelible mark on the Islands and their natives. Shortly after Captain Cook's arrival, Captain George Vancouver introduced the first cattle. Amongst the cattle introduced in 1793 were eight females and four males. Captain Vancouver gave these cattle to King Kamehameha as a gift. King Kamehameha let his cattle roam the plains of Waimea (Hawai'i) where they multiplied. By 1830, cattle had been introduced to Maui, Kaua'i, O'ahu and Moloka'i. Kamehameha initially placed a restriction on the cattle. By the time this restriction was lifted in 1830, thousands of longhorns were on the plains of Waimea alone (Dye, 1996).

To address the rapidly changing environment in the early 1800s, certain interventions were brought about by the early monarchs. The Great Mahele decreed certain lands to chiefs, and land was also sold to foreigners. The Hawaiian Islands had become a major thoroughfare for Europeans as busy ports were erected to accommodate these travelers. The sandalwood trade was soon replaced by others such as whaling, cattle, and agricultural crops (Dye, 1996). Due to the increase in trade and the need for laborers, the islands became a melting pot of ethnic diversities that migrated there in search of work.

One of the colorful influences on Hawaiian history involved the hiring of Spanish herdsmen to control the overgrowth of the free-roaming cattle. These men were known as vaqueros, and Hawaiians later referred to them as *paniolos*. *Paniolos* provided a very prominent addition to Hawai'i's growing melting pot. A new brand of working class evolved in the *paniolos*, as they lived a lifestyle quite remote from that of the general public. It is speculated that herdsmen were roaming Hawai'i's mountain plains even before America evolved its version of cowboys that roamed its Wild West.

In a very brief period, cattle herding found its niche in Hawai'i's economy. The influence spread to native Hawaiians who, enamored with the lifestyle, started up ranches of their own. Among the notables in the field was the first recorded commercial dairy founded in 1869 (Dye, 1996). In 1809, Parker Ranch domesticated cattle on the Big Island, providing one of the most significant events in Hawai'i's history. Parker Ranch encompasses 225,000 acres across the Big Island and is one of America's oldest ranches (Dye, 1996). It also has the distinction of being the country's largest private ranch under single ownership.

Current Land Issues

Certain concerns have arisen from the introduction of cattle to the Hawaiian Islands. Today, there are still wild cattle that roam the plains of certain islands as feral ungulates. On the islands of Hawai'i, Maui and Moloka'i, cattle graze on the high plains undisturbed by man. These cattle damage much of the habitat of the endemic species that inhabit the areas. Also of note are the feral pigs that also are responsible for much of the damage. Other destructive grazers and browsers include goats, deer, and mouflon sheep (Cabin, 2000). Together these feral ungulates are largely responsible for the decrease in Hawa'i's rarest birds and plants.

The impact of cattle is evident in the reduction of native plants, drier soil, loss of understory, destruction of shallow-rooted plants, and the introduction of alien grasses (Cabin, 2000). The habitats of many of Hawai'i's native birds and plants are lush watersheds. Early Hawaiian human populations thrived in the mountain areas because of the ease of farming and availability of resources due to properly cultivated grasslands. The introduction of cattle to these areas has destroyed much of the grassland.

Despite fencing and state-regulated hunting, the problem still persists. Feral ungulates also provide much of the political dilemma that legislators are faced with today. Fencing off prime hunting grounds by agencies and groups for conservation has resulted in pig hunters calling for change. Recreational hunting does not target the cattle since these are not considered adequate game. Wild pigs, however, are responsible for consumption of

Hawai'i's native trees, and burrowing through rare vegetation. This in turn has provided nesting grounds for mosquitoes that cause many of the deadly infections that have inflicted Hawai'i's honeycreepers in the same habitat (Jorritsma, 1999). Fencing off the cattle also results in fencing off the wild pigs, which the pig hunters protest.

A compromise is being worked out between private landowners and conservationists, both groups being advocates for the eradication of feral pigs. In a collective effort, pig hunters are allowed access to some of these private lands to hunt. This plays significantly in the control of cattle because the remaining fences restrict the activities of the cattle. Some landowners do request the assistance of the state in removing the cattle. On the eastern slopes of Haleakala, cattle graze the mountain slopes without disturbance. The state owns most of the higher elevation slopes and is content with allowing the cattle to roam freely.

Effects on Terrestrial Biota

Livestock congregate around water, generally in large concentrations, and tend to feed for longer periods than do other herbivores. This potentially affects native residents such as Hawaiian water birds and passerines. The excessive grazing of livestock and incessant trampling damage many riversides, creeks, springs, marshes, wet meadows, sinkholes, bogs and bottoms similarly to the well-documented damage caused by cattle on the mainland (Jacobs, 2002). Ponds and small lakes are particularly susceptible because they usually have little replenishing flow to dilute water-borne sediments, urine, and manure. Water that previously infiltrated into groundwater supplies to be eventually released slowly as surface water now runs quickly off watersheds into waterways, eventually reaching the oceans (Jacobs, 2002). Hawai'i's critical watersheds are threatened by loss of effectiveness in providing potable water.

When cattle stomp around in wet areas, their hooves often sink deeply into the mud, sometimes to a depth of a foot or more. According to Jacobs (2002), this displaces or kills numerous mud-dwelling creatures, many in hibernation, as well as insects in pupal and larval stages. Native *Drosophila* larvae in soils are affected negatively by this. This subsurface zoological community is generally more diverse and complex than either the overlying watery or terrestrial communities. Aquatic plants, trampled and left to rot in waterways or along banks, slowly decay and release their nutrients into the water, augmenting eutrophication and aggravating algal blooms (Jacobs, 2002).

Cattle movement through waterways causes displacement of rocks on stream and lake bottoms. These rocks, until displaced, offer shelter to many kinds of small animals, places to bear and rear young, feeding spots, and hibernation sites (Jacobs, 2002). Without them, small invertebrates (various worms, insect larvae, fresh water clams, snails, etc.,) do not survive. Silt and organic matter also settle around rock bases, securing them to stream or lakebeds and promoting plant growth (Jacobs, 2002). This vegetation, in turn, stabilizes these sediments and filters out other water borne sediments. The plants and animals killed also add to water pollution by displacing rocks and stirring up stream bottoms. Livestock release directly large amounts of sediment into the water, further increasing turbidity (Jacobs, 2002). This reduces light penetration, in turn reducing aquatic plant photosynthesis, which further reduces dissolved oxygen levels. Additionally, these waterborne sediments harm or kill aquatic animals and plants.

Direct Effect on Humans

Many diseases and disorders are spread via water borne livestock pollution to wild animals and humans. Most are caused by bacteria or protozoa. Various salmonella bacteria spread by livestock through surface waters cause disease to humans and wildlife. Dysentery may be spread through feces or water, and anthrax bacteria live in the stagnant pools and hoof ruts created by trampling cattle. This in turn may result in loss of wild and domestic animals that are usually killed quickly (Jacobs, 2002). A similar bacteria-caused disease is black leg, which finds it way into the roots and stems of natural vegetation that ultimately affects the herbivores that eat it.

Livestock grazing is the main reason we may no longer safely drink from natural water sources. Along with leptospirosis, giardiasis is caused by a pathogen that parasitizes the intestinal tracts of humans and at least 40 wild and domestic cattle (Jacobs, 2002). Giardiasis can debilitate the body on a semi-permanent basis and cause abdominal pain, bloating, vomiting and diarrhea, sometimes leading to hospitalization (Jacob, 2002).

Through the years the cattle industry has provided a modest amount of Hawaii's annual beef supply. According to the Hawaii agricultural statistics service, the total number of cattle on Jan. 1, 2002 was 152,000 head, 2,000 head more than in Jan. 1, 2001 (http://www.ers.usda.gov/statefacts/hi.htm). Cattle and calf marketing totaled 59,000 head during 2001, a decrease of 14,000 head from the previous year with the majority of the cattle being shipped out of state (State Fact Sheet).

Federal government regulates requirements for all beef and seeks to protect the health of consumers. Cattle for import to Hawai'i must meet the following requirements:

Originate from a herd not quarantined for brucellosis, tuberculosis, or anaplasmosis.

Tested within 30 days for brucellosis, tuberculosis, and anaplasmosis (complement fixation test for anaplasmosis).

Dipped or sprayed with a U.S. Department of Agriculture approved insecticide.

Include a "Free of External Parasites" statement.

Under state provisional quarantine and retested within 60- 90 days.

Efforts to Improve

The overall effect of Cattle on Hawai'i's terrestrial biota reveals the need for closer monitoring of natural reserves and watersheds. This impact has resulted in the loss of many of Hawai'i's endemic species and the threat of extinction of many unique plant and animal species. The concern on a national scale is spurred on by man-made interests that have resulted in the conversion of these natural ecosystems into pasturelands. The imminent concerns over a growing human population and its increasing demands have resulted in changes in the approach towards supplying food. Increasing production yield have involved scientific interventions aimed at genetically engineering crops and feeds for cattle (Reimoser; 1999). Research into genetically engineered cattle may soon become an alternative.

Typically, pastureland for cattle results in less recycling of resources. Naturally undisturbed habitats utilize maximum energy recycling because of an increase number of organisms that can inhabit the area; this is not the case in pasturelands. A food web similar to the one found in the ocean serves as a good analogy. If phytoplankton are the primary producers in an intricate system of energy flow, capable of capturing the energy provided by the sun, then one could compare the low-lying vegetation in forests as primary producers of forest ecosystems. The effort to increase cattle yield at the cost of destroying forests not only result in the decrease in other species, but does not produce as much of a high energy yield and adversely affects the flow of nutrients (Reimoser, 1999).

Cattle are unnatural introductions into the ecosystem, and being domesticated inhibits them from having significant evolutionary prowess. The ability to adapt to a changing environment is of little consequence, and the presence of predators only comes in the form of humans for the most part. Feral cattle in Hawai'i rarely have need to compete with other species for resources. Cattle occur as the welfare recipients of the animal kingdom, lazily devouring precious resources while providing a net sum that is negative for mankind. So unassuming and hand-reared are these animals that the greatest intervention on man's part to protect the environment has mostly involved the building of fences.

Conclusion

Cattle grazing, land clearing for pasture, development, and introductions of alien species have caused a tenth of the estimated 1,250 species of flowering plant species and subspecies that were present 200 years ago to become extinct (Reimoser, 1999). The greatest impact of grazing on native vegetation has been the depletion of species over large areas, far more than any other human influence. Though they may not have been reduced to the point of imminent extinction, hundreds of native plant species have been reduced to only a fraction of their original population range, and have been eliminated from many areas altogether.

It is, however, important to note that these animals are not as damaging to the forest as are feral pigs. They provide a very colorful aspect of Hawai'i's history. *Paniolos* live a lifestyle today that retains much of the old style aloha with the rugged persona associated with cattle herders. As an attraction, many tourists visit the ranches on the Big Island and Moloka'i. In order to meet the basic needs of a growing society, cattle will continue to play a part. The balance between man and the natural process of the environment requires a look back into the natural history of Hawai'i. It is possible to continue to ensure the safety and propagation of endangered species while maintaining what is otherwise a very mild invasive species. Cattle in Hawai'i do not produce as much damage to the terrestrial environment as they do in the mainland U.S. However, to maintain the uniqueness of Hawai'i's endemic habitats, adverse effects of cattle grazing must be monitored closely.

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State Fact Sheet (http://www.ers.usda.gov/statefacts/hi.htm)

Announcement

A New Regular Feature for NHBS

RECENT LITERATURE IN HAWAIIAN BOTANY

Articles are frequently published in the literature that would be of importance to many of our members, but are not in obvious places for them to find. Such articles are in the fields of systematics, evolution, ecology, conservation biology, plant anatomy, ecophysiology, and the list goes on and on. For instance, the most recent issue of *Evolution* has an article by Rankin et al (2002) that discusses the problems caused by inbreeding in populations of *Schiedea menziesii* (Caryophyllaceae), a hermaphroditic species endemic to ledges and cliffs of dry forests on Maui, Moloka'i and Lana'i (Wagner et al. 1999). Many of our readers would be interested reading such an article, but unless they regularly examine issues of *Evolution* they are likely to miss it.

In some cases, articles may have only a minor Hawaiian component to the article (i.e., the phylogeny of a genus with one species native to Hawai'i). In such cases, the authors may not have emphasized much about the relevance to Hawai'i, but to those who study these issues it could have a profound affect upon our understanding (i.e., biogeography and colonization of the species).

Format

We encourage you to submit the references to papers you have seen over the past several years. If possible, also provide a brief synopsis of the importance or relevance to Hawaiian Botany. Alternatively, send a copy to the editor and a synopsis will be provided. The synopsis does not necessarily mean a reiteration of the abstract from the paper, but a few sentences up to a couple paragraphs that describe the findings in your own words would be more appropriate.

The intent is to present a forum whereby authors can make their work known to the general Hawaiian botanical community or to simply pass along articles of others that may be of general interest. The last issue of each volume will include a listing of all references included in that volume as a resource to facilitate finding the literature more easily.

How?

Send the reference and synopsis to Cliff Morden, *NHBS* Editor, via E-mail at cmorden@hawaii.edu, or mail at Department of Botany, 3190 Maile Way, University of Hawaii, Honolulu, HI 96822.

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Hildenbrandia rubra: The First Report of a Marine *Hildenbrandia* From Hawai'i

Alison R. Sherwood

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The crustose alga *Hildenbrandia* is one of the most widespread red algal genera worldwide, occurring along the rocky shorelines of all continents. Currently, the marine taxa are known to be distributed from the Canadian Arctic to the Baja Peninsula and Central America on the Pacific coast of North America, and from Newfoundland to the Caribbean on the Atlantic coast. Globally, the genus has been reported from diverse locations such as Chile, Brazil, Peru, Argentina, the British Isles, the Baltic Sea, the Atlantic coast of western Europe, the Mediterranean, South Africa, India, Vietnam, Korea, Japan, Australia and Antarctica (Sherwood, 2000). Freshwater representatives of the genus are also known from tropical and subtropical regions of the world, as well as European locations (Sherwood and Sheath, 2000). *Hildenbrandia angolensis* Welw. ex W. West et G.S. West was the first of these to be reported from Hawai'i (Vis et al., 1994), and was found to be widespread in stream systems of the islands.

Worldwide, the most commonly encountered marine species is *H. rubra* (Sommerf.) Meneghini. This taxon was discovered at one O'ahu locality (upper intertidal zone between Sandy Beach and Makapu'u) in January 2001. Thalli of *H. rubra* resemble red paint splotches on rocks, and are composed of a series of vertical files of cells (50-200 µm thick) that arise from a prostrate basal layer. Given the broad geographical occurrence of the alga it is not surprising that it is also present in Hawai'i. For several reasons, it is not likely that *Hildenbrandia* is a recent introduction to the islands: 1) as a fleshy crustose alga it is extremely slow growing (Maggs, 1990); 2) the simple and diminutive morphology of the alga has probably resulted in being overlooked, and 3) viewed without microscopical aid it strongly resembles other red algal crusts (for example, the red alga *Peyssonnelia*, which is common in Hawai'i [Abbott, 1999]). A voucher specimen has been deposited at the B.P. Bishop Museum (BISH) in Honolulu (Sherwood 183).

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A New Genus of Alien Grass Discovered in Hawai‘i: *Oryzopsis* (Poaceae)

Steve J. Dougill and Paul C. Banko

**US Geological Survey - Pacific Island Ecosystems Research Center, Kilauea Field Station,
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Despite lower plant and animal species diversity generally found at high elevations, surprises do occur. Unfortunately, these typically involve the range expansion of known species or the discovery of new non-indigenous plant species (Dougill and Gold 2001). Since November 1998, we have documented 190 plant species (excluding intentionally planted trees) within the subalpine forests of Mauna Kea, and of these, two-thirds (129) are alien. The large number of alien species should come as no surprise, as the forest is highly disturbed and fragmented after decades of feral ungulate damage (Warner, 1960; Scowcroft and Giffin, 1983) and the introduction of many plant species to the Hawaiian Islands (Wagner et al., 1999).

While conducting vegetation surveys in December 1998, we discovered four isolated clumps of an unknown grass on the western slope of Mauna Kea between 1874-2438 m elevation. At the higher elevation, a single clump was growing in open mamane (*Sophora chrysophylla*) woodland with a continuous ground cover of temperate-zone alien grasses. Lower down, close to Pu‘u Ahumoa the remaining clumps were located next to roads in highly disturbed areas of mixed naio (*Myoporum sandwicense*) – mamane forest. Derek Clayton of Kew Gardens, UK, identified the grass as *Oryzopsis miliacea* (L.) Benth. & Hook. f. ex Asch. & Schweinf., previously uncollected in Hawai‘i.

Oryzopsis miliacea (smilo grass) is a tall (up to 1.5 m.), perennial feathery mountain rice that is native to the Mediterranean region of Europe and the Middle East. This genus is easily recognizable by its single floret within the spikelet, glumes that exceed the floret, and a single short (two to three times the floret length) stout awn from the lemma apex. It is similar to and closely related with *Stipa* (tribe Stipeae), which differs by having a long, usually geniculate (bent) awn. *Oryzopsis miliacea* is a drought-resistant species that was introduced to central and southern California for range reseeding. Although it has undoubtedly been spread intentionally to other regions, it does not become established readily in the wild (Magness et al., 1971).

It is unclear how or when this species invaded Mauna Kea, but it possibly was introduced into neighboring grazing lands to help restore degraded pasture. Alternatively, *O. miliacea* may have been one of the many undocumented plant species introduced by Hawai‘i Department of Land and Natural Resources to improve food resources for game birds (L. Perry, pers. comm.). It is clear, however, that the continuing presence of feral ungulates promotes weed establishment and spread. Although this species may cause little harm in small, scattered populations, it may pose more serious threats if it spreads.

Acknowledgments

Many thanks go once more to Derral Herbst, of the B. P. Bishop Museum, who has identified many of our difficult species and who sent this grass to Kew Gardens.

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Hawaiian Botanical Society Meeting Minutes

January 7, 2002

Guests: Dean Brown (Alaska Forestry)

Minutes: Approved as read.

Treasurer's Report:
Start: $2504.56
Expenses: $653.24
Income: $1163.41
End: $3014.73

Membership Report

- Carol Annable reported that there were 10 membership renewals since the December meeting.

Announcements:
- Joan Canfield announced that she would not be able to be Vice President of the Botanical Society due to other commitments.
- Alvin Yoshinaga announced that when a vacancy is declared in one of the committee positions, such as vice president, an election will be held at the following meeting for that position.
- The Botanical Society is currently looking for an individual to fill the position of vice president.
- The next meeting will be held at 7:00 p.m., instead of 7:30 p.m. (see Old Business).

Old Business:
- Susan Ching motioned that the meetings be moved up ½ hour earlier to 7:00 p.m. The motion was seconded and passed with a majority vote.

New Business:

No new business was conducted at the meeting.

Plant of the Month: Molokai's Offshore Islets, Maya LeGrande, UH Botany Dept.

Topic/Speaker: An Introduction to Big Island Silversword Reintroduction, Joan Canfield.

February 4, 2002

Guests: None

Minutes: Approved as read.

Treasurer's Report:
Start: $3014.73
Expenses: $0.00
Income: $169.90
End: $3184.63

Eileen Herring has agreed to audit the books for the 2001 year.

Membership Report

- Carol Annable reported that the Botanical Society got two new life members in January: Tim Motley of Bronx, NY and Jean-Yves Meyer of La Reunion Island, France
- 1 new family member, Mary Miller of Eureka, CA
- 9 regular renewals
- 5 family renewals
- 3 Institution renewals
- 1 student renewal.

Announcements:
- A Reminder: The next meeting will be held at 7:00 p.m.
- The Botanical Society webpage, located at http://www.botany.hawaii.edu/botsoc/botsoc.htm, has been updated with current information. In addition, the contents of past Newsletters are being put on the web this year and should be completed in a few months (I hope).
- Dr. Cliff Morden announced that he is looking for someone to take over as editor of the Newsletter of the Hawaiian Botanical Society.
- Dr. Morden also announced that he would like to shorten the name of the newsletter to "Rollandia" or something to that effect.
- Dr. Morden also announced that reprints of articles or back issues would be available upon request, and upon payment of a small fee, but wanted to suggest that reprints of authors' papers be available to the author upon request, and at no charge, if made in advance of the publication of the newsletter.
- Susan Ching announced that the revised designation for critical habitat by the USFWS for the

islands of Kauai and Niihau was available for comment and review. Contact Susan for more details.

Old Business:

- As there was a vacancy in the position of Vice President announced at the last meeting, Maya LeGrande was nominated as the new Vice President. Maya was elected as the new vice president at the February meeting.

New Business:

- No new business was conducted at the meeting.

Plant of the Month: Mamane, *Sophora chrysophylla*, Shelly Lammers, University of Hawaii.

Topic/Speaker: Some plant ecology and conservation stories from Tonga, Dr. Don Drake, UH Botany Dept.

March 4, 2002

Guests: Paul Krushelnycky, U.C. Berkeley

Minutes: Approved as read.

Treasurer's Report:
Start: $3184.63
End: $3416.68

Announcements:

- Volume 40, Number 4 of the Newsletter of the Hawaiian Botanical Society is complete and will be mailed out shortly.
- Aaron Lowe, Na Ala Hele, announced that he is working on getting the Poamoho Trail reopened.
- Dan Sailer, TNC, announced that the Honouliuli Habitat Restoration Team would be holding their organizational meeting, Tuesday, March 5 at the First Unites Methodist Church. For more information, contact Nat Pak at 621-2008.
- Betsy Gagne announced that she needed assistance with the native plant garden at the DLNR base yard on Sunday, March 10, 9:00 a.m.
- Betsy Gagne announced that the Y.C.C. program is looking for high school interns for the summer program.

Old Business:

- Dr. Morden brought up the issue of adding a plant genus name to the Newsletter of the Hawaiian Botanical Society. He suggested *Rollandia*, and solicited suggestions via e-mail. Other names included "*Pelea*", "*Clermontia*" or no name change at all. A motion was made and seconded to either add a name to the newsletter or leave it as is. 11 people voted to change the name, and 11 voted against a name change. As the vote was a tie, President Susan Ching suggested that the issue be addressed at the April meeting.

New Business:

- No new business was conducted at the meeting.

Plant of the Month: *Bocconia*, The Problem Poppy, Chuck Chimera, University of Hawaii, Botany Dept.

Topic/Speaker: Dry Forest and Coastal Ecosystem Restoration, Melissa Dumaran, Natural Resources Program Manager, Hawaii Army National Guard.

April 1, 2002

Guests: None

Minutes: Approved as read.

Treasurer's Report:
Ron Fenstemacher is in Rapa Nui, so no treasurer's report was given.

Announcements:

- Ray Baker announced that the Lyon Arboretum Plant Sale will be held Saturday, April 6, at the Blaisdell Center.
- Aaron Lowe, Na Ala Hele, announced that the Poamoho Trail will currently have limited access to groups such as the Sierra Club.
- Na Ala Hele will be hiring three interns for its summer program on June 17. Please notify any interested high school or college students who may be interested. More information can be obtained from the campus human resources office.

Old Business:

- Susan Ching informed the society that the bylaws indicated a name change in the newsletter would require a 2/3-majority vote. As the vote at the March meeting was a tie, the issue of changing the newsletter's name has been dropped. Dr. Morden also withdrew his suggestion to change the name.

New Business:

- David Orr, Waimea Botanical Garden, informed the society that he RFP for managing the Valley is out and there are two potential candidates: the current operator and the National Audubon Society. It is to be assumed that the current operator would continue to manage the valley as a tourist attraction with little or no support for the botanical collection or for the work of the botanical personnel (which is currently being solely supported by donations to the Foundation.) Those people who wish to support the efforts of the Audubon Society to obtain the contract for management of the Valley should write a letter addressed to Ms. Carroll Takahashi, but mail the letters to Diana King so that they can be included in their response to the RFP.

Diana King
1167 Lunaai St.
Kailua, HI 96734

Ms. Carrol Takahashi
Director, Budget & Fiscal Services
City Hall, Room 115
530 S. King St.
Honolulu, HI 96813

Plant of the Month: *Zanthoxylum oahuense*. Nellie Sugii, Lyon Arboretum Plant Propagation

Topic/Speaker: The Restoration of the Ka`u Silversword: *Argyroxiphium kauense*. Ane Bakutis, UH Botany Department & Hawaii Volcanoes National Park.

May 6, 2002

Guests: None

Minutes: C. Chimera absent; Minutes approved as read by M. Legrande.

Treasurer's Report:
None given.

Announcements:

- None.

Old Business:

- None officially reported.

New Business:

- None reported.

Plant of the Month: *Chamaesyce skottsbergii* var. *skottsbergii*, James Kwan, USFWS

Topic/Speaker: Ethnobotany of Coastal Trees in Manu`a, American Samoa. , Mike Wysong, UH Botany.

September 9, 2002

Guests: None

Minutes: No minutes reported from unofficial June meeting.

Treasurer's Report:
Ron Fenstemacher reported a balance of approximately $3300 in the BotSoc account, and will prepare an exact report later this month..

Announcements:

- Alvin Yoshinga reported that seed ecologists Carol and Gerry Baskin have been funded to conduct a study on seed dormancy of montane plants in the Hawaiian Islands and has a copy of the proposal for those interested.

Old Business:

- None officially reported.

New Business:

- None reported.

Plant of the Month: Stream Algae of Hawaii – The Early Days of Exploration, Alison R. Sherwood, UH Botany

Topic/Speaker: Mushrooms and Other Fleshy Fungi Found in the Hawaiian Islands, Don. E. Hemmes, UH Hilo.

18 FEB
2003

NEWSLETTER OF THE HAWAIIAN BOTANICAL SOCIETY
C/O DEPARTMENT OF BOTANY
UNIVERSITY OF HAWAI'I AT MANOA
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